

BOAS (F.) Compliment of the author.

HUMAN FACULTY AS DETERMINED BY RACE.

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BY

FRANZ BOAS,

VICE-PRESIDENT, SECTION H.

BEFORE THE

SECTION OF ANTHROPOLOGY,

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,

AT THE BROOKLYN MEETING,

AUGUST, 1894.



[From the PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE
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PROUD of his wonderful achievements, civilized man looks down upon the humbler members of mankind. He has conquered the forces of nature and compelled them to serve him. He has transformed inhospitable forests into fertile fields. The mountain fastnesses are yielding their treasures to his demands. The fierce animals which are obstructing his progress are being exterminated, while others which are useful to him are made to increase a thousand fold. The waves of the ocean carry him from land to land and towering mountain ranges set him no bounds. His genius has moulded inert matter into powerful machines which wait a touch of his hand to serve his manifold demands.

What wonder when he pities a people that has not succeeded in subduing nature; who labor to eke a meagre existence out of the products of the wilderness; who hear with trembling the roar of the wild animals and see the products of their toils destroyed by them; who remain restricted by ocean, river or mountains; who strive to obtain the necessities of life with the help of few and simple instruments.

Such is the contrast that presents itself to the observer. What wonder if civilized man considers himself a being of higher order as compared to primitive man; if it is claimed that the white race represents a higher type than all others.

When we analyze this assumption, it will soon be found that the superiority of the civilization of the white race alone is not a sufficient basis for this inference. As the civilization is higher, we assume that the aptitude for civilization is also higher; and as the aptitude for civilization presumably depends upon the perfection of the mechanism of body and mind, the inference is drawn that the white race represents the highest type of perfection. In this conclusion, which is reached through a comparison of the social status of civilized man and of primitive man, the achievement and the aptitude for an achievement have been confounded. Furthermore, as the white race is the civilized race, every deviation from the white type is considered a characteristic feature of a lower type. That these two errors underlie our judgments of races can be easily shown by the fact that, other conditions being equal, a race is always described as the lower the more fundamentally it differs from the white race. This becomes clearest by the tendency on the part of many anthropologists to look for anatomical peculiarities of primitive man which would characterize him as a being of lower order, and also by the endeavors of recent writers to prove that there exist hardly any anatomical features of the so called lowest races which would stamp them as lower types of organisms. Both these facts show that the idea dwells in the minds of investigators that we should expect to find in the white race the highest type of man.

In judging social distinctions the same error is frequently committed. As the mental development of the white race is the highest, it is also supposed to have the highest aptitude in this direction, and therefore its mind is supposed to have the most subtle organization. As the ultimate psychical causes are not so apparent as anatomical characters, the judgment of the mental status of a people is generally guided by the difference between its social status and our own; the greater the difference between their intellectual, emotional and moral processes and those which are found in our civilization the harsher the judgment on the people. It is only when a Tacitus finds the virtues of past stages of the culture of his own people among foreign tribes, that their example is held up to the gaze of his fellow-citizens, who probably had a pitying smile for the dreamer who clung to the ideas of a time which they had left far behind.

It might be objected that although achievement is not necessarily

a measure of aptitude, it seems admissible to judge the one by the other. Have not most races had the same chances for development? Why, then, did the white race alone develop a civilization which is sweeping the whole world and compared to which all other civilizations appear as feeble beginnings cut short in early childhood, or arrested and petrified in an early stage of development? Is it not, to say the least, probable that the race which attained the highest stage of civilization was the most gifted one, and that those races which remained at the bottom of the scale were not capable of rising to higher levels?

It seems desirable to enter into these questions somewhat fully. Let our mind go back a few thousand years until it reaches the time when the civilizations of eastern and of western Asia were in their infancy. As time passed on, these civilizations were transferred from one people to another, some of those who had represented the highest type of culture sinking back into obscurity, while others took their places. During the dawn of history we see civilization clinging to certain districts, in which it is taken up now by one people, now by the other. In the numerous conflicts of these times the more civilized people were often vanquished. The conqueror, however, learned the arts of life from the conquered and carried on the work of civilization. Thus the centres of civilization were shifting to and fro over a limited area and progress was slow and often interrupted. At the same period the ancestors of the races, who are now among the most highly civilized, were in no way superior to primitive man as we find him now in regions that have not come into contact with modern civilization.

Was the culture attained by the ancient civilized people of such character as to allow us to claim for them a genius superior to that of any other race? First of all, we must bear in mind that none of these civilizations was the product of the genius of a single people. Ideas and inventions were carried from one to the other; and, although intercommunication was slow, each people which participated in the ancient civilization added to the culture of the others. Proofs without number have been forthcoming which show that ideas have been disseminated as long as people have come into contact with each other and that neither race nor language nor distance limits their diffusion. As all have worked together in the development of the ancient civilizations, we must bow to the genius of all, whatever race they may represent: Hamitic, Semitic, Aryan or Mongol.

We may now ask, Did no other races develop a culture of equal value? It would seem that the civilizations of ancient Peru and of Central America may well be compared with the ancient civilization of the Old World. In both we find a high stage of political organization; we find division of labor and an elaborate ecclesiastical organization. Great architectural works were undertaken requiring the coöperation of many individuals. Animals and plants were domesticated and the art of writing had been invented. The inventions and knowledge of the peoples of the Old World seem to have been somewhat more numerous and extended than those of the races of the New World, but there can be no doubt that the general status of their culture was nearly equally high. This will suffice for our consideration and I will not enter upon the fact that a greater variety of peoples had contributed to the progress of civilization in the Old World, and that nature had endowed their homes more abundantly with useful animals and plants than the homes of the peoples of the New World.

What then is the difference between the civilization of the Old World and that of the New World? It is only a difference in time. The one reached a certain stage three thousand or four thousand years sooner than the other. This difference in period does not justify us to assume that the race which developed more slowly was less gifted. Certainly the difference of a few thousand years is insignificant as compared to the age of the human race. The time required to develop the existing races is entirely a matter of conjecture, but we may be sure that it was long. We also know that man existed in the eastern and western hemispheres at a time which can be measured by geological standards only; and, if we assume arbitrarily no more than 20,000 years as the age of man, what would it mean that one group of mankind reached the same stage at the age of 20,000 years which was reached by the other at the age of 24,000 years? Would not the life history of the people and the vicissitudes of its history be fully sufficient to explain a delay of this character, without necessitating us to assume a difference in their aptitude to social development?

When admiring the high achievements of the white race we also ought to bear in mind that civilization originated among few of its members and by the help of other races, and that there is no evidence that the cognate tribes which have all developed under the influence of this ancient civilization would not, without its help,

have required a much longer time to reach the high level which they now occupy.

But why did these tribes so easily assimilate the culture that was offered them, while at present we see primitive people dwindle away and become degraded before the approach of civilization, instead of being elevated by it? Is not this a proof of a higher organization of the inhabitants of Europe? I believe the reasons for this fact are not far to seek and do not necessarily lie in a greater ability of the races of Europe and Asia. First of all, these people were alike in appearance to civilized man of their times. Therefore the fundamental difficulty for the rise of primitive people, namely, that an individual which has risen to the level of the higher civilization is still looked upon as belonging to an inferior race, did not prevail. Thus it was possible that, in the colonies of ancient times, society could grow by accretion from among the more primitive people. Furthermore, the devastating influences of diseases which nowadays begin to ravage the inhabitants of territories newly opened to the whites were not so strong on account of the permanent contiguity of the people of the Old World who were always in contact with each other and therefore subject to the same influences. The invasion of America and Polynesia, on the other hand, was accompanied by the introduction of new diseases among the natives of these countries. The suffering and devastation wrought by epidemics which followed the discovery are too well known to be described in full.

In addition to this it may be said that the contrast between the culture represented by the modern white and that of primitive man is far more fundamental than that between the ancients and the people with whom they come in contact. Particularly, the methods of manufacture have developed so enormously that the industries of the primitive people of our times are exterminated by the cheapness and large quantity of the products imported by the white trader; because primitive man is unable to compete with the power of production of the machines of the whites, while in olden times the superior hand product rivalled with a hand product of a lower type. It must also be considered that in several regions, particularly in America and in parts of Siberia, the primitive tribes are swamped by the numbers of the immigrating race which is crowding them so rapidly out of their old haunts that no time for gradual assimilation is given. In olden times there was certainly no

such immense inequality in numbers, as we observe in many regions nowadays.

We conclude, therefore, that the conditions for assimilation in ancient Europe were much more favorable than in those countries, where in our times primitive people come into contact with civilization. Therefore we do not need to assume that the ancient Europeans were more gifted than other races which have not become exposed to the influences of civilization until recent times.

This conclusion may be corroborated by other facts. In the middle ages, the civilization of the Arabs had reached a stage which was undoubtedly superior to that of many European nations of that period. Both civilizations had sprung largely from the same sources and must be considered branches of one tree. The Arabs who were the carriers of civilization were by no means members of the same race as the Europeans, but nobody will dispute their high merits. It is of interest to see in what manner they influenced the negro races of the Soudan. At an early time, principally between the second half of the eighth century and the eleventh century of our era, the Soudan was invaded by Hamitic tribes and Mohammedanism was spreading rapidly through the Sahara and the western Soudan. We see that, since that time, large empires were formed and disappeared again in struggles with neighboring states and that a relatively high degree of culture has been attained. The invaders intermarried with the natives, and the mixed races, some of which are almost purely negro, have risen high above the level of other African negroes. The history of Bornu is perhaps one of the best examples of this kind. Barth and Nachtigal have made us acquainted with the history of this state, which has played a most important part in the history of north Africa.

Why, then, have the Mohammedans been able to civilize these tribes and to raise them to nearly the same standard which they had attained, while the whites have not been capable of influencing the negro in Africa to any considerable extent? Evidently on account of the different method of introduction of culture. While the Mohammedans influence the people in the same manner in which the ancients civilized the tribes of Europe, the whites send only the products of their manufactures and a few of their representatives into the negro country. A real amalgamation between the higher types of the whites and the negroes has never taken

place. The amalgamation of the negroes by the Mohammedans is facilitated particularly by the institution of polygamy, the conquerors taking native wives and raising their children as members of their own family.

The spread of the Chinese civilization in eastern Asia may be likened to that of the ancient civilization in Europe. Colonization and amalgamation of kindred tribes and, eventually, extermination of rebellious subjects with subsequent colonization, have led to a remarkable uniformity of culture over a large area.

When, finally, we consider the inferior position held by the negro race of the United States, who are in the closest contact with modern civilization, we must not forget that the old race-feeling of the inferiority of the colored race is as potent as ever and is a formidable obstacle to its advance and progress, notwithstanding that schools and universities are open to them. We might rather wonder how much has been accomplished in a short period against heavy odds. It is hardly possible to say what would become of the negro if he were able to live with the whites on absolutely equal terms.

Our conclusion drawn from the foregoing considerations is the following: Several races have developed a civilization of a type similar to the one from which our own had its origin. A number of favorable conditions facilitated the rapid spread of this civilization in Europe. Among these, common physical appearance, contiguity of habitat and moderate difference in the modes of manufacture were the most potent. When, later on, civilization began to spread over other continents the races with which modern civilization came into contact were not equally favorably situated. Striking differences of racial types, the preceding isolation which caused devastating epidemics in the newly discovered countries and the greater advance in civilization made assimilation much more difficult. The rapid dissemination of Europeans over the whole world cut short all promising beginnings which had arisen in various regions. Thus no race except that of eastern Asia was given a chance to develop an independent civilization. The spread of the European race cut short the growth of the existing independent germs without regard to the mental aptitude of the people among whom it was developing. On the other hand, we have seen that no great weight can be attributed to the earlier rise of civilization in the Old World which is satisfactorily explained

as a chance. In short, historical events appear to have been much more potent in leading races to civilization than their faculty, and it follows that achievements of races do not warrant us to assume that one race is more highly gifted than the other.

We will next compare the physical and psychical characteristics of the various races with a view to the question of their mental ability.

There is no doubt that great differences exist in the physical characteristics of the races of man. But the question is not if differences exist, but if any one race is anatomically considered superior to others. It is clear that our answer cannot be based upon vague descriptions of travellers who remark upon the enormous digestive organs of primitive man, or on his small size, or on the lack of development of his limbs, or even upon his resemblance to apes, but upon serious studies of anatomical characteristics. A number of these differences are sufficiently fundamental to distinguish certain races clearly from others, although we must bear in mind that innumerable transitions exist between the races of man. The color of the skin, the form of the hair and the configuration of the lips and nose distinguish the African negro clearly from most other races. Nevertheless, it would be easy to find among members of the American race, for instance, lips and nose which might be mistaken for those of a negro. The same may be said of color, while no negro hair will be found among American aborigines. When studying any single anatomical characteristics of races, we find the same phenomenon which was observed in the cases here quoted: the variations inside any single race are such that they overlap the variations in another race so that a number of characteristics may be common to individuals of both races. Still, the single feature does not characterize the race and the differences are sufficiently numerous to permit a satisfactory definition of the characters of races.

The overlapping of variations is significant in so far as it shows that the existing differences are not fundamental. I will describe these phenomena somewhat more fully and enumerate at the same time a number of variations between races. In treating first the anthropometric characteristics I must call to mind the important fact, which is frequently overlooked in comparisons of races, that the proportions of the body show certain correlations which must be taken into consideration. The most obvious of these is the

correlation between stature and sizes of parts of the body. For this reason tribes of different stature cannot be compared without a proper reduction of the observed figures. In our comparison it will be well to pay particular attention to those races which we are inclined to consider the lowest; to wit, the negroid races and the oldest prehistoric races.

The proportions of the body as found among various races show very slight differences only. We may say that the trunks of the Mongoloid races as compared to their statures are longer than those of Europeans whose trunks in turn are longer than those of the negroes; that the lower limbs of the last-named race are longer than those of the white and Mongoloid races, and that the same is true in regard to the upper limbs. The head of the Mongoloid race is highest when compared to the stature; that of the negro is smallest. All these differences are slight and not in such a direction as to make one race more ape-like than the other. On the contrary, we find that the characteristic differences between man and ape are often more pronounced in the negro race than in the white race, and we may say with Ranke that many proportions of the lower races are to a higher degree human than those of the white.

In judging the value of these differences we must remember that the proportions of the body do not depend entirely upon descent, but just as much upon mode of life. Fritsch was the first to make it clear that between primitive man and civilized man differences are found which are quite in accord with the differences between wild animals and domesticated animals, and we all know how far-reaching the influence of domestication may become. He found that the skeletons of primitive races remain lighter while the bones are thinner and denser than those of civilized man. The secondary sexual characters are not clearly marked and effects of malnutrition or irregular nutrition are always present. The necessity of physical effort which applies to all the muscles of the body causes a different development from that observed in civilized man, in whom muscular effort is slighter or more specialized. These conclusions are borne out by the striking differences in the proportions of the body which develop among different occupations inside the same population.

The best authenticated fact, because it is based on the greatest number of observations, is the difference in type between sailors

and soldiers who were measured during the war of the Rebellion. It was found that sailors had legs as long as those of the negroes and correspondingly a shorter trunk, while their arms were equally long as those of the soldiers of the army. We may also call to mind the investigations carried on in the gymnasia of our colleges which show that a series of measurements which depend largely upon the functions of groups of muscles change very rapidly under the influence of practice. It will be acknowledged at once that differences in the use of muscles during childhood and continued in later life must result in differences of structure. Such differences must, therefore, not be considered racial but cultural features. The differences which cannot be explained by functional causes are few in number and they are not of such a character as to stamp one race as lower than the other.

We will next consider a number of formations which have often been described as characterizing lower races or as theromorphisms. One of these is a variation in the form of the temporal bone which, in man, is ordinarily separated from the frontal bone by the sphenoid and parietal bones. It has been found that in some individuals the temporal bone encroaches upon the sphenoid and parietal and comes into contact with the frontal bone. This formation is the prevalent one among the apes. It has been proved that this variation is found among all races but with unequal frequency, and that it is probably connected with disturbances in the formation of the temporal region which depend upon malnutrition in early infancy. We must therefore not wonder that the phenomenon is found more frequently among primitive people than among civilized people.

The peculiar formation of the tibia known as platycnemism, which has been observed on skeletons of the oldest remains of man in Europe and which was considered a proof of his lower stage of development, and the peculiar formation of the articular surfaces of tibia and femur, have been recognized as purely functional and as occurring among all races of the present times

Certain other variations which were at one time considered as characteristics of races are also found to occur all over the world. Such are the *Os Incae* which occurs among all races but most frequently among the Peruvians and the inhabitants of the ancient pueblos; the smallness of the nasal bones and their synostosis with the maxilla; the so-called prenasal fossæ; the variations in the

arrangement of arteries and of muscles. All these variable features are found to vary among all races, but the degree of variability is not everywhere the same. Presumably such variations may be considered human characteristics which have not yet had time to become stable and which in this sense may be considered as still in process of evolution. If this interpretation be correct, it might seem that we can consider those races in which the various features are more stable as those which are more highly organized.

This would refer, however, only to such features as are not caused by the influence of environment. But even this conclusion is subject to an important restriction. Numerous primitive tribes are very small in numbers or have had for long periods, during which they increased in numbers, little intercourse with foreign people. If, in such a group, any of the original families showed a certain peculiarity, it must now be found more frequently than in other tribes. A case of this kind is the frequency of supernumerary vertebrae among the Indians of Vancouver Island, and probably also the frequency of the *torus palatinus* among the Lapps. It may be left an open question, if the frequent occurrence of the *Os Incae* among the Pueblo Indians may be explained by the same consideration. Therefore, it may be that the greater variability of certain races, in regard to these phenomena, is not an expression of a lower degree of development of the whole group, but of the presence of a great number of members of a family which possessed the peculiar character. That is to say, in order to admit the conclusion that greater variability means lower stage of development, it would be necessary first to prove that the variations appear spontaneously among any number of the group and do not belong to certain families in which the feature is hereditary.

While the consideration of the characters treated heretofore has not given any conclusive evidence of the superiority of certain races, the study of the form and size of the head seems to promise better results. We find that the face of the negro as compared to the skull is larger than that of the American, whose face is in turn larger than that of the white. The lower portion of the face assumes larger dimensions. The alveolar arch is pushed forward and thus gains an appearance which reminds us of the higher apes. There is no denying that this feature is a most constant character of the black races and that it represents a type slightly nearer the animal than the European type. The same may be said of the

broadness and flatness of the nose of the negro and of the Mongol; but here again we must call to mind that prognathism and low, broad noses are not entirely absent among the white races, although the more strongly developed forms which are found among the negroes do not occur. The variations belonging to both races overlap: We find here at least a few indications which tend to show that the white race differs more from the higher apes than the negro. But does this anatomical difference prove that their mental capacity is lower than that of the white? The probability that this may be the case is suggested by the anatomical facts, but they by themselves are no proof that such is the case. I shall revert to this subject later on.

It has been stated that the individuals of certain races are arrested in their development earlier than others and that the latter races must therefore be considered as more highly developed. Among these phenomena I will mention the fact that the noses of children of various races are more alike than those of adults. The nose of the Mongols does not change so much during adolescence as that of the whites. According to Quatrefages the basin of the negro does not differ so much from the foetal forms as that of other races and resembles at the same time more that of higher apes than the basins of other races. On the other hand, the face of the negro child is less prognathous than that of the adult. In this case we find that the more energetic development tends to produce a type which is apparently lower than that of the white. We may even go a step farther and say that the ontogenetic development of the higher apes and of man is such that the young forms are more alike than the old ones. While in man the face develops moderately only, it grows considerably among the apes. The earlier arrest in this case is therefore an indication of higher type. Thus it will be seen that it is not the earlier arrest alone which determines the place of a race, but the direction of this development. For this reason we cannot assume that the earlier arrest of development of that portion of the face situated between the eyes, as is observed in the Mongol race, is an indication of a lower type, while the marked increase of breadth and elevation of nose, as found among the whites indicates a higher type.

In a general review of these phenomena we find that the peculiarities of the various races develop in such a manner that some remain in one respect on earlier stages than others, while other

features develop more strongly. Among instances of such development carried on to a higher degree may be mentioned the large size of the frontal sinuses among the Melanesians, the prognathism of the Negroes, the greater length of the limbs of the same race, the high and narrow nose of the whites. In judging the value of these facts we must also not forget that the female sex is in all the proportions and forms of its body more like the child than the male, and that the most specialized types appear among the male sex. But who would explain this earlier arrest of development of women as mark of a lower type?

In comparing human races in regard to the periods over which the development of certain parts of the bodies extend, we must always consider the functions of the organs in question. If we could prove that the brain of certain races ceases to develop at an earlier period than that of others, the inference of the inferiority of race would seem highly probable. At the present time no satisfactory basis for such comparisons exists. Growth during adolescence is always small, and extensive and accurate series of observations are required in order to establish any characteristic differences between races. It has been shown that among the white race growth of the whole body continues until after the thirty-fifth year. The same phenomenon has been observed among the negroes, while the Indians appear to have reached their highest stature before the thirtieth year. The growth of the head of Indians and whites seems to extend over an approximately equal period. It would be of great interest, if we could ascertain the growth of the head of other races with accuracy. Since it has been proved that the most gifted students of our colleges show a longer period of growth than those who form the average class, the period of head-growth has become of great importance in connection with our inquiry.

Unfortunately, data are lacking entirely at least for a comparison between the white race and those races which are considered the lowest. As we know that the laws of the general growth of the body of the Indian and of the white differ considerably, the inference is justified that such differences may be found in the growth of certain organs and that they will prevail among different races. It is true that in such comparisons mortality, nutrition, occupation, play an important part; but, nevertheless, racial differences may be expected to exist. In fact, the similarity of children of various

racés and the dissimilarity of the adult make it certain that they will be found and we anticipate that they will give us a better idea of the relation of the races than comparison of the adult stage alone can do.

We will now turn to the important subject of the size of the brain, which seems to be the one anatomical feature which bears directly upon the question at issue. It would seem that the greater the central nervous system, the higher the faculty of the race and the greater its aptitude to mental achievements. Let us review the known facts. Two methods are open for ascertaining the size of the central nervous system: the determination of the weight of the brain and that of the capacity of the cranial cavity. The first of these methods is the one which promises the most accurate results. Naturally, the number of Europeans whose brain-weights have been taken is much larger than that of individuals of other races. There are, however, sufficient data available to establish beyond a doubt the fact that the brain-weight of the whites is larger than that of most other races, particularly larger than that of the negroes. That of the white male is about 1370 grammes. The investigations of cranial capacities are quite in accord with these results. According to Topinard, the capacity of the skull of males of the neolithic period of Europe is about 1560 cc.; that of modern Europeans is the same; of the Mongoloid race 1510 cc.; of African negroes 1405 cc., and of negroes of the Pacific ocean 1460 cc. Here we have, therefore, a decided difference in favor of the white race. These differences cannot be explained as the effect of difference in stature, the negroes being at least as tall as the Europeans.

In interpreting these facts we must ask, Does the increase in the size of the brain prove an increase in faculty? This would seem highly probable and facts may be adduced which speak in favor of this assumption. First among these is the increase of the relative size of the brain among higher animals, thence to man. Furthermore Manouvrier has measured the capacity of the skulls of thirty-two eminent men. He found that they averaged 1663 cc. as compared to 1560 cc. general average. On the other hand he found that the cranial capacity of forty-one murderers was 1593 cc., also superior to the general average. The same result has been obtained through weighings of brains of eminent men. The brains of thirty-four of these showed an average increase of 163 grammes

over the average brain-weight of 1370 grammes. The force of the arguments furnished by these observations must, however, not be overestimated. Most brain-weights are obtained in anatomical institutes, and the individuals which find their way there are poorly developed on account of malnutrition and life under unfavorable circumstances, while the eminent men represent a much better nourished class. As poor nourishment reduces the weight and size of the whole body it will also reduce the size and weight of the brain. It is not certain, therefore, that the observed difference is entirely due to the higher ability of the eminent men. The difference between the cranial capacities of eminent men and of the general population is increased beyond its actual size by the difficulties encountered in determining the sex of skulls. Skulls of a number of men are always mistaken for those of women and *vice versa*, which tends to reduce the capacity for males, while it increases that of the females. As, in the case of eminent people, the sex is known accurately, it may be expected that the average capacity of the skulls of eminent men will be higher than that of skulls the sex of which is not known. It must be said, however, that Broca's measurements, the results of which are given above, show that he determined the sex of a skull with considerable accuracy. Another fact which may be adduced in favor of the theory that greater brains are accompanied by higher faculty, is, that the city population show higher capacities than those of the country; also that the observation that the heads of the best English students continue to grow longer than those of the average class of students.

While the force of these arguments must be admitted, a number of restricting facts must be enumerated. The most important among these is the difference in the brain-weight between men and women. When men and women of the same stature are compared it is found that the brain of the woman is much lighter than that of the man. Nevertheless, the faculty of woman is undoubtedly just as high as that of man. This is therefore a case in which smaller brain-weight is accompanied throughout by equal faculty. We conclude from this fact that it is not impossible that the smaller brains of males of other races should not do the same work that is done by the larger brain of the white race. But this comparison is not quite on equal terms, as we may assume that there is a certain structural difference between male and female which causes the difference in size between the sexes, so that comparison be-

tween male and female is not the same as a comparison between male and male. We will also remember that, although the brains of eminent men are, on the average, larger than those of the average individual, there are some small brains included in their number.

Notwithstanding these restrictions, the increase of the size of the brain in the higher animals and the lack of development in microcephalic individuals are fundamental facts which make it more than probable that increased size of the brain causes increased faculty, although the relation is not quite as immediate as is often assumed.

Assuming that capacity is nearly proportional to the size of the brain, we must remember that the average sizes of the brain of the white are numerously represented among other races. Middle-sized brains of whites may be represented by the group of individuals having capacities of from 1450 to 1650 cc. This group encloses 55 per cent of the Europeans, 58 per cent of the African negroes and 58 per cent of the Melanesians. The same result appears when we compare the number of individuals having great capacities. We find that 50 per cent of all whites have a capacity of the skull greater than 1550 cc., while 27 per cent of the negroes and 32 per cent of the Melanesians have capacities above this value. We might, therefore, anticipate a lack of men of high genius, but should not anticipate any great lack of faculty among the great mass of negroes living among whites and enjoying the advantages of the leadership of the best men of that race.

This, however, is hardly the correct standpoint, as mental ability certainly does not depend upon the size of the brain alone. The proper point of view of this question is brought out most clearly by Dr. H. H. Donaldson whose opinion I will quote. He says, "I consider the significance of the encephalon to depend upon the number and size of the cells composing it. In the negroes and lower races generally, the number of cells is probably less than in the white. This is mainly an inference from the total weight of the encephalon. Equally important are the final stages in the enlargement of the structural elements, stages which apparently have the result of bringing a larger number of elements into physiological connections by means of a very slight quantitative extension of their branches. Changes, which moreover can be followed, say in the cortex of the brain of the white in individuals

thirty or more years of age. When we compare the capacity for education between the lower and higher races, we find that the great point of divergence is at adolescence and the inference is fairly good that we shall not find in the brains of the lower races the post-pubertal growth in the cortex to which I have just alluded. As to the sculpturing of the brain surface by gyri and sulci we still lack any good racial characters."

We have now gone over the field of anatomical differences between races so far as they have a bearing upon our question. Our conclusion is, that there are differences between the physical characters of races which make it probable that there may be differences in faculty. No unquestionable fact, however, has been found yet which would prove beyond a doubt that it will be impossible for certain races to attain a higher civilization.

We must next examine the psychological characteristics of primitive people in order to discover if there are any which assign them a lower place among mankind. This investigation is exceedingly difficult and unpromising because it appears doubtful throughout which of these characteristics are causes of the low stage of culture and which are caused by it, or which of the psychological characteristics are hereditary and would not be wiped out by the effects of civilization. The fundamental difficulty of collecting satisfactory observations lies in the fact that no large groups of primitive man are brought nowadays into conditions of real equality with whites. The gap between our society and theirs always remains open and for this reason their mind cannot be expected to work in the same manner as ours. The same phenomenon which led us to the conclusion that primitive races of our times are not given an opportunity to develop their abilities prevents us from judging their innate faculty. On account of this insurmountable difficulty which seems to make all attempts at a satisfactory solution of this problem impossible, I will confine myself to a few fundamental points and suggestions as to the method by which this important question may be solved.

Numerous attempts have been made to describe the peculiar psychological characteristics of primitive man. Among these I mention those of Wuttke, Klemm, Eichthal, de Gobineau, Nott and Gliddon, Waitz, Spencer and Tylor. Their investigations are of merit as descriptions of the characteristics of primitive people, but we cannot claim for any of them that they describe the psy-

chological characters of races independent of their social surroundings. Klemm and Wuttke designate the civilized races as active, all others as passive, and assume that all elements and beginnings of civilization found among primitive people—in America or on the islands of the Pacific ocean—were due to an early contact with civilization. Eichthal considers human society as an organism and assumes that the white race represents the male, the negro the female principle. De Gobineau calls the yellow race the male element, the black race the female element and calls only the whites the noble and gifted race. Nott and Gliddon ascribe animal instincts only to their lower races, while they declare that the white race has a higher instinct which incites and directs its development. All such views are generalizations which either do not sufficiently take into account the social conditions of races, and thus confound cause and effect, or were dictated by scientific or humanitarian bias or by the desire to justify the institution of slavery. Tylor and Spencer, who give an ingenious analysis of the psychological faculty of primitive man, do not assume that these are racial characteristics, although the evolutionary standpoint of Spencer's work often seems to convey this impression. I think the true point of view has been expressed most happily by Waitz. He says, "According to the current opinion the stage of culture of a people or of an individual is largely or exclusively a product of his faculty. We maintain that the reverse is at least just as true. The faculty of man does not designate anything but how much and what he is able to achieve in the immediate future and depends upon the stages of culture through which he has passed and the one he has reached."

The descriptions of the state of mind of primitive people, such as are given by most travellers, are too superficial to be used for psychological investigation. Very few travellers understand the language of the people they visit, and how is it possible to judge a tribe solely by the descriptions of interpreters, or by observations of disconnected actions the incentive of which remains unknown? But even when the language is known to the visitor, he is generally an unappreciative listener of their tales. The missionary has his strong bias against the religious ideas and customs of primitive people, and the trader has no interest in their beliefs and in their barbarous arts. The observers who really entered into the inner life of a people, the Cushings, Callaways and

Greys, are few in number and may be counted at one's finger's ends. Nevertheless, the bulk of the argument is always based on the statement of hasty and superficial observers.

I will now select a few of the mental qualities which are most persistently claimed as racial characteristics of the lower groups of mankind. Among the emotional characters impulsiveness is considered the most fundamental. Most of the proofs for this alleged peculiarity are based on the fickleness and uncertainty of the disposition of primitive man and on the strength of his passions aroused by seemingly trifling causes. I will say right here, that the traveller or student measures the fickleness of the people by the importance which he attributes to the actions or purposes in which they do not persevere, and he weighs the impulse for outbursts of passion by his standard. Let me give an example. The traveller, desirous to reach his goal as soon as possible, engages men to start on a journey at a certain time. To him time is exceedingly valuable. But what is time to primitive man who does not feel the compulsion of completing a definite work at a definite time? While the traveller is fuming and raging over the delay, his men keep up their merry chatter and laughter and cannot be induced to exert themselves except to please their master. Would not they be right in stigmatizing the impulsiveness and lack of control of many a traveller when irritated by a trifling cause like loss of time? Instead of this the traveller complains of the fickleness of the natives who quickly lose interest in the objects which the traveller has at heart. The proper way to compare the fickleness of the savage and that of the white is to compare their behavior in undertakings which are equally important to each. Does not primitive man persevere wonderfully in the manufacture of his utensils and weapons? Does he shrink from privations and hardships which promise to fill his ambition of obtaining higher rank among his fellows? The Indian, fasting in the mountains, awaiting the appearance of his guardian spirit, the youth who must give a proof of his bravery and endurance before being accepted in the ranks of the men of his tribe may be adduced as examples. The alleged fickleness may always be explained by a difference of the valuation of motives and is not a specific characteristic of primitive man. Primitive man perseveres in certain pursuits which differ from those in which civilized man perseveres.

The same may be said of the outbursts of passion occasioned by slight provocations. What would a primitive man say to the noble passion which preceded and accompanied the War of the Rebellion? Would not the rights of slaves seem to him a most irrelevant question? On the other hand, we have ample proof that his passions are just as much controlled as ours, only in different directions. The numerous customs and restrictions regulating the relations of the sexes or the use of the food supply may serve as examples. The difference in impulsiveness may be fully explained by the different weight of motives in both cases. In short, perseverance and control of passion are demanded of primitive man as well as of civilized man but at different occasions. If they are not demanded as often, the cause must be looked for not in the inherent inability to produce them, but in the social status which does not demand them to the same extent.

Spencer mentions as a particular case of this impulsiveness the improvidence of primitive man. I believe it would be more proper to say instead of providence, optimism. "Why should I not be as successful to-morrow as I was to-day?" is the guiding thought of primitive man. This thought is, I think, not less powerful in civilized man. What builds up business activity but the belief in the stability of existing conditions? Why do the poor not hesitate to found families without being able to lay in store beforehand? We must not forget that starvation among most primitive people is an exceptional case the same as financial crisis among civilized people, and that for times of need, such as occur regularly, provision is always made. Our social status is more stable so far as the acquiring of the barest necessities of life is concerned, so that exceptional conditions do not prevail often; but nobody would maintain that the majority of civilized men is always prepared to meet emergencies. We may recognize a difference in the degree of improvidence caused by the difference of social status but not a specific difference between lower and higher types of man.

Another trait which has been ascribed to primitive man is his inability of concentration when any demand is made upon the more complex faculties of the intellect. I will mention an example which seems to make clear the error committed in this assumption. In his description of the natives of the west coast of Vancouver Island, Sproat says: "The native mind, to an educated man, seems generally to be asleep On his attention being

fully aroused, he often shows much quickness in reply and ingenuity in argument. But a short conversation wearies him, particularly if questions are asked that require efforts of thought or memory on his part. The mind of the savage then appears to rock to and fro out of mere weakness." Spencer, who quotes this passage, adds a number of others corroborating this point. I happen to know the tribes mentioned by Sproat through personal contact. The questions put by the traveller seem mostly trifling to the Indian and he naturally soon tires of a conversation carried on in a foreign language and one in which he finds nothing to interest him. I can assure you that the interest of those natives can easily be raised to a high pitch and that I have often been the one who was wearied out first. Neither does the management of their intricate system of exchange prove mental inertness in matters which concern the natives. Without mnemonic aids they plan the systematic distribution of their property in such a manner as to increase their wealth and social position. These plans require great foresight and constant application.

I will select one more trait which has often been adduced as the primary reason why certain races cannot rise to higher levels of culture, namely, their lack of originality. It is said that the conservatism of primitive man is so strong that the individual never deviates from the traditional customs and beliefs. While there is certainly truth in this statement in so far as customs are more binding than in civilized society, at least in its most highly developed types, originality is a trait which is by no means lacking in the life of primitive people. I will call to mind the great frequency of the appearance of prophets among newly converted tribes as well as among pagan tribes. Among the latter we learn quite frequently of new dogmas which have been introduced by such individuals. It is true that these may often be traced to the influence of the ideas of neighboring tribes, but they are modified by the individuality of the person and grafted upon the current beliefs of the people. It is a well-known fact that myths and beliefs have been disseminated and undergo changes in the process of dissemination. Undoubtedly this has often been accomplished by the independent thought of individuals. I believe one of the best examples of such independent thought is furnished by the history of the ghost-dance ceremonies in North America. I am indebted to Mr. James Mooney, a close student

of this subject, for the following opinion: "Briefly and broadly it may be stated that the more primitive a people, the more original their thought. Indian prophets are usually original as to their main doctrine, but are quick to borrow anything that may serve to make it more impressive. Heathenism is usually tolerant and the Indian sees no inconsistency in adding to his heathenism anything that he can borrow from Christianity." A few cases which have come under my own observation are entirely in accord with this opinion; that is to say, the doctrine of the Indian prophet is new, but based upon the ideas of his own people, their neighbors, and the teachings of missionaries. The notion of future life of the Kwakiutl of Vancouver Island has undergone a change in this manner, in so far as the idea of the return of the dead in children of their own family has arisen. The same independent attitude may be observed in the replies of the Nicaraguan Indians to the questions regarding their religion which were put to them by Bobadilla and which were reported by Oviedo.

To my mind the mental attitude of individuals who thus develop the beliefs of a tribe is exactly that of the civilized philosopher. The student of the history of philosophy is well aware how strongly the mind of even the greatest genius is influenced by the current thought of his time. This has been well expressed by my friend Rudolph Lehmann in his work on Schopenhauer. "The character of a system of philosophy is, just as that of any other literary work, determined first of all by the personality of its originator. Every true philosophy reflects the life of the philosopher as well as every true poem that of the poet. Secondly, it bears the general marks of the period to which it belongs, and the more powerful the ideas which it proclaims, the more strongly it will be permeated by the currents of thought which fluctuate in the life of the period. Thirdly, it is influenced by the particular bent of philosophical thought of the period."

If such is the case among the greatest minds of all times, why should we wonder that the thinker in primitive society is strongly influenced by the current thought of his time? Unconscious and conscious imitation are factors influencing civilized society, not less than primitive society, as has been shown by G. Tarde, who has proved that primitive man and civilized man as well, imitates not such actions only as are useful, and for the imitation of which logical causes may be given, but also others for the adop-

tion or preservation of which no logical reason can be assigned.

Based on these considerations we believe that in the more complicated psychological phenomena no specific differences between lower and higher races can be found. By this, however, we do not mean to say that no such differences exist or can be found, only that the method of investigation must be different. It does not seem probable that the minds of races which show variations in their anatomical structure should act in exactly the same manner. Differences of structure must be accompanied by differences of function, physiological as well as psychological; and, as we found clear evidence of difference in structure between the races, so we must anticipate that differences in mental characteristics will be found. Thus, a smaller size or lesser number of nervous elements would probably entail loss of mental energy, and paucity of connections in the central nervous system would produce sluggishness of the mind. As stated before, it seems probable that some differences of this character will be found between the white and negro, for instance, but they have not been proved yet. As all structural differences are quantitative, we must expect to find mental differences to be of the same description, and as we found the variations in structure to overlap, so that many forms are common to individuals of all races, so we may expect that many individuals will not differ in regard to their faculty, while a statistical inquiry embracing the whole races would reveal certain differences. Furthermore, as certain anatomical traits are found to be hereditary in certain families and hence in tribes and perhaps even in peoples, in the same manner mental traits characterize certain families and may prevail among tribes. It seems, however, an impossible undertaking to separate in a satisfactory manner the social and the hereditary features. Galton's attempt to establish the laws of hereditary genius points out a way of treatment for these questions which will prove useful in so far as it opens a method of determining the influence of heredity upon mental qualities.

On account of this difficulty I do not enter upon a discussion of the characters of nations. Much has been said about the hereditary characteristics of the Jews, of the gypsies, of the French and Irish, but I do not see that the social causes which have moulded the character of members of these people have ever been eliminated satisfactorily; and, moreover, I do not see how this can be accomplished without previous investigations into the question as

to which groups of mental qualities are hereditary. A number of external factors may easily be named: climate, nutrition, occupation; but, as soon as we enter into a consideration of social factors, we are unable to separate cause and effect or external and internal factors. The first-named groups affect the physiological functions of the body and through them the mind. An excellent discussion of these influences upon the character of a people is given by A. Wernich in his description of the character of the Japanese. He finds some of their peculiarities caused by the lack of vigor of the muscular and alimentary systems which in their turn are due to improper nutrition, while he recognizes other physiological traits which influence the mind as hereditary. We may expect to find still more far-reaching effects of malnutrition which was continued through long generations among the Bushmen and the Lapps.

We know some of the correlations between physiological and psychological functions. It is clear, therefore, that where such correlation is known, the physiological phenomena which accompany the psychical traits ought to be made a subject of special study in reference to the question, whether the mental traits under consideration are hereditary or not.

The only feasible way of attacking the psychological problem while excluding social factors seems to be to investigate the psychical processes of great numbers of individuals of different races who live under similar conditions. This can be accomplished but has not been done yet to such an extent as to allow us to draw far-reaching conclusions. I mention that Professor Barnes and Miss Hicks found differences of favorite colors between children of different races and different ages; that attempts have been made to show that the minds of negro children cease to develop sooner than those of white children, although the results are not conclusive. Modest investigations of the senses and of simpler mental activities of children will give the first satisfactory answer to the important question of the extent of racial differences of faculty. The schools of our country, particularly those of large cities, open a vast field for researches of this character.

We have now one more point to consider, namely, the question if the faculty of man has been improved by civilization, and particularly, if that of primitive races may be improved by this agency. We must consider both the anatomical and psychological

aspects of this question. I have already pointed out that civilization causes anatomical changes of the same description as those accompanying the domestication of animals. It is likely that changes of mental character go hand in hand with them. The observed anatomical changes are, however, limited to this group of phenomena. We cannot prove that any progressive changes of the human organism have taken place, and particularly no advance in the size or complexity of the structure of the central nervous system caused by the cumulative effects of civilization can be proved.

There seems to be no doubt that the anatomical characters of the races have in all their main points remained constant. Kollmann has proved that the oldest remains of man found in Europe represent the types which are still found among the modern civilized populations. As our knowledge of the older types of Europeans is confined to their osseous remains, it cannot be expected that finer differences, even if they existed, would be found. The difficulty of proving a progress of faculty is still greater. It seems to me that the probable effect of civilization upon an evolution of human faculty has been much overestimated. The psychical changes which are the immediate consequence of the domestication or civilization may be considerable. They are changes due to the influence of environment. It is doubtful, however, if any progressive changes or such as are transmitted by heredity have taken place. The number of generations subjected to this influence seems altogether too small. For large portions of Europe we cannot assume more than forty or fifty generations, and even this number is probably considerably too high, in so far as in the middle ages the bulk of the population lived on very low stages of civilization.

Besides this, the tendency of human multiplication is such that the most highly cultured families tend to disappear, while others which have been less subjected to the influences regulating the life of the most cultured class take their place. Therefore, it is much less likely that advance is hereditary than that it is transmitted by means of education. I believe, furthermore, that educational influences, which include the general educating influence of social surroundings, are superficial as compared to hereditary causes.

In illustrating the improving effects of civilization through transmission, much weight is generally laid upon cases of relapse of individuals belonging to primitive races who have been educated.

These relapses are interpreted as proofs of the inability of the child of a lower race to adapt itself to our high civilization, even if the best advantages are given to it. It is true that a considerable number of such cases are on record. Among these I will mention Darwin's Fuegian who was educated in England and returned to his home where he fell back into the ways of his primitive countrymen; and the West Australian girl who was married, but suddenly fled to the bush after killing her husband and resumed life with the natives. These cases are true, but not one of them has been described with sufficient detail. The social and mental conditions of the individual have never been subjected to a searching analysis. I should judge that, notwithstanding their better education, their social position was always one of isolation, while the ties of consanguinity formed a connecting link with their uncivilized brethren. The power with which society holds us and does not give us a chance to step out of its limits cannot have acted as strongly upon them as upon us. On the other hand, the station obtained by many negroes in our civilization seems to me to have just as much weight as the few cases of relapse which have been collected with much care and diligence. I should place side by side with them the cases of white men who live alone among native tribes and who sink almost invariably to a semi-barbarous position, and the members of well-to-do families who prefer unbounded freedom to the fetters of society, and flee to the wilderness where many lead a life in no way superior to that of primitive man.

We have now considered the question in how far human faculty is determined by race from three points of view. We have shown that the anatomical evidence is such, that we may expect to find the races not equally gifted. While we have no right to consider one more ape like than the other, the differences are such that some have probably greater mental vigor than others. The variations are, however, such that we may expect many individuals of all races to be equally gifted, while the number of men and women of higher ability will differ. When considering the psychological evidence, we found that most of it is not a safe guide for our inquiry, because causes and effects are so closely interwoven that it is impossible to separate them in a satisfactory manner, and as we are always liable to interpret as racial character what is only an effect of social surroundings. We saw, however, that investigations based on physiological psychology and experimental psychol-

ogy will allow us to treat the problem in a satisfactory manner. In these and in detailed studies of the anatomy of the central nervous system of the races we must look for a final solution of our problem.

Finally, we found that there is no satisfactory evidence that the effects of civilization are inherited beyond those which are incident to that domestication to which civilization corresponds. We know that these are hereditary to a limited degree only and that domestication requires only few generations. We did not find proof of cumulative increase of faculty caused by civilization.

Although, as I have tried to show, the distribution of faculty among the races of man is far from being known, we can say this much: the average faculty of the white race is found to the same degree in a large proportion of individuals of all other races, and although it is probable that some of these races may not produce as large a proportion of great men as our own race, there is no reason to suppose that they are unable to reach the level of civilization represented by the bulk of our own people.

